

**Remarks**

Claims 10, 19, 25 , 29, 34 and 40-43 are pending in the application. Claims 1-9, 11-18, 20-24, 26-28 and 35-39 have been canceled without prejudice or disclaimer. Claims 40-43 are newly added.

**Claim objections**

Withdrawal of the objection to claim 34 is respectfully requested in view of the amendment thereto set forth above.

**Claim rejections**

**Section 112**

Withdrawal of the rejection of claim 34 under 35 USC 112, 1st paragraph is respectfully requested in view of the amendment thereto set forth above.

Claim 25 was rejected under 35 USC 112, 2<sup>nd</sup> paragraph as being indefinite. The Applicant respectfully traverses the rejection. The Office Action alleges that “no recitation is made to how the different layers are actually structurally different from one another . . . .” To the contrary: according to claim 25, the inner layer is stronger than the outer layer, and the outer layer is more adhesive than the inner layer. These are definite, objectively verifiable relationships. Respectfully, it is simply incorrect to say, as the Office Action does, that “any multilayered structure with different types of materials as the layers reads on the claims . . . .” First, claim 25 does not recite “different types of materials” generally, it explicitly recites structures made from a mixture of carbon and synthetic resin. Second, there exist innumerable layered structures that do not possess the relationship and properties of the layers recited in claim 25. Claim 25 is clear and definite. Withdrawal of the rejection of claim 25 under 35 USC 112, 2<sup>nd</sup> paragraph is respectfully requested.

## Section 102

Claims 10, 25 and 34 were rejected under 35 USC 102(b) as being anticipated by Kato (JP 10261421, equivalent to US 6,127,059). The Applicant respectfully traverses.

Kato does not support the rejection of claim 10 for at least the reason that Kato does not disclose "wherein the base layer and the binder impregnated into the base layer are carbonized at about 2000°C," as recited. Support for this feature may be found in the present specification at page 20, paragraph [84] (lines 9-12 thereof).

Based on earlier Office Actions, it is expected that the Examiner may regard the latter as non-limiting "product-by-process" language. However, it is noted that MPEP § 2113 states:

"The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garner*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)"

Here, the "wherein the base layer and the binder impregnated into the base layer are carbonized at about 2000°C" does impart distinctive structural characteristics to the final product.

In Kato, resin is solidified at 200-350°C but is not converted into carbon by carbonizing, in contrast to the present invention as set forth in claim 1. Therefore, Kato's solidified binder does not have electrical conductivity.

In contrast, in the present invention, the resin binder is carbonized (converted into carbon at the entire portion thereof) and solidified. Therefore, the binder converted into carbon has good electrical conductivity.

With respect to claim 25, Kato fails to disclose the claimed structure. Kato is silent with regard to multiple layers formed from a mixture of carbon and synthetic resin as recited in claim 25. The Office Action points to col. 1, lines 15 et seq. of Kato as

disclosing a multi-layered water-repellant layer. However, this portion of Kato at most discloses a layer of PTFE mixed with carbon black, and a *catalyst* layer. Claim 25 calls for two layers having specific strength and adhesiveness relationships to each other, where both layers are made of a mixture of carbon and synthetic resin. Consequently, Kato cannot meet the recitations of claim 25. Claim 25 is therefore allowable.

The Office Action repeats the comment that “the use of the phraseology ‘higher rigidness’ is relative to the materials at hand and can change with any reference.” The relevance of this comment is not understood. The Applicant agrees that “higher,” or perhaps more to the point, “greater” and “stronger” are relative terms. However, claim 25 says that the strength of the inner layer is greater than that of the outer layer, and that the adhesiveness of the outer layer is stronger than that of the inner layer. These are comparative relationships, it is agreed, but the relationships do not change. Therefore, it is not understood what is meant by “can change with any reference.” Clarification is respectfully requested.

Claim 34 is allowable for at least the reason that it recites resin filaments “wherein the synthetic resin is deformed into said filaments by applying a shear force to the mixture before the mixture in the form of a paste is coated onto the base layer.” This feature is supported by the present specification at page 35, paragraph [132] (lines 6-8 thereof). The recited process step imparts distinctive structural characteristics to the final product, namely resin filaments. While the Office Action points to “filaments” in Kato at col. 5, line 46, these are yarn filaments, not resin filaments formed as in claim 34.

In view of the above, withdrawal of the rejection under 35 USC 102(b) is respectfully requested.

Claim 19 was rejected under 35 USC 102(e) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Beattie et al. (US 6,667,127) (“Beattie”). The Applicant respectfully traverses. Beattie does not support the rejection for at least the reason that Beattie in no way suggests “the first and the second portions being distributed in alternating planar regions across the base layer” as recited in claim

19. Instead, Beattie only shows vertical layers; there is no suggestion of any kind of planar distribution, still less one of alternating regions as claimed.

Accordingly, withdrawal of the asserted rejection is respectfully requested.

Claim 29 was rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Kato, and under 35 USC 103(a) as being unpatentable over Kato in view of Akuto (US 5,346,785). The Applicant respectfully traverses. The cited references do not support the rejection for at least the reason that they do not disclose or suggest "wherein the two kinds of binders are dissolved in solvent, coated onto the water-repellent layer, and solidified at a temperature near the melting point of the synthetic resin" as recited in claim 29. Support for this feature may be found in the present specification at page 33, paragraph [126] (lines 10-13 thereof).

The primary reference Kato does not disclose or suggest two binders. Instead, Kato only discloses a layer that includes a single binder, a plurality of examples of which are shown. The other references do not remedy the deficiencies in Kato. Withdrawal of the rejection is therefore respectfully requested.

#### New claims

The new claims are allowable over the art of record. For example, Kato does not disclose "said inner layer solidified at a first temperature and said outer layer solidified at a second temperature lower than the first" as recited in new claim 40. The recited process steps impart distinctive structural characteristics to the final product. As described in the present specification in paragraphs [114]-[124], the process steps result in a structure wherein the inner layer has a strength greater than a strength of the outer layer, and the outer layer has an adhesiveness stronger than an adhesiveness of the inner layer. This is because when the mixture of carbon and synthetic resin forming the layers is treated at a temperature higher than about 350°C, it bulks and becomes rigid. When the mixture of carbon and synthetic resin is treated at a temperature near the melting point of the synthetic resin (for example, at about 320°C) the half-melted

synthetic resin particle is deformed into a filament to generate an adhesiveness. These structural features are absent from the prior art.

Accordingly, claim 40 is allowable, as are new claims 41 and 42 for at least the reason that they depend on claim 25.

Conclusion

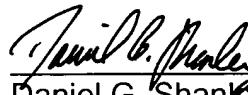
In light of the above discussion, Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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By:

  
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Daniel G. Shanley  
Reg. No. 54,863

KENYON & KENYON LLP  
1500 K Street, N.W., Suite 700  
Washington, D.C. 20005  
Tel: (202) 220-4200  
Fax: (202) 220-4201